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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/841,039	04/25/2001	Toshihiro Mori	018775-824	4356

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EXAMINER	
SETH, MANAV	
ART UNIT	**PAPER NUMBER**
2625	

DATE MAILED: 09/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/841,039	MORI, TOSHIHIRO	
	Examiner	Art Unit	
	Manav Seth	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 July 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *14-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *14-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *07/13/2001*.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment received on July 13, 2005 has been entered in full.

2. Applicant's amendment to the claims has been entered and based on the amendments claim objections on the respective claims have been withdrawn.

3. Applicant's amendment to the specification has been entered and based on the amendment objection on the specification has been withdrawn.

4. Applicant's arguments with respect to rejected claims as presented in the amendment filed have been fully considered but are moot in view of new ground(s) of rejection(s).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 14, 15 and 19-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al., U.S. Patent No. 5,390,003 further in view of Bloomberg et al., U.S. Patent No. 5,048,109.

Regarding Claim 14, Yamaguchi et al. discloses a pattern-detection apparatus that detects a specific pattern contained in an image, said pattern-detection apparatus comprising:

a binarizing unit that binarizes an input image data to obtain binary image data (Figure 5, Binarization Section; Column 11, Lines 46-52),

a partial-image recognition unit that recognizes a partial image being contained in said binary image data and being part of said specific pattern (Figure 10, Circular Pattern; Column 11, Lines 53-56) , and

a specific pattern determination unit that determines said specific pattern contained in said image, based on the recognition results obtained by said partial-image recognition unit (Column 11, Lines 57-62),

Yamaguchi does teach recognizing a partial image being contained in said binary image data and being a part of said specific pattern but does not specifically teach the details such as "wherein said partial-image recognition unit recognizes partial image contained in said binary image data for a pixel-block area having a predetermined size and containing an target pixel in said binary image data, based on at least one of the conditions concerning the pixels at the opposite vertices, the pixels on the said pixel-block outermost lines of area, and the pixels on the opposite sides on the outermost lines of said pixel-block area. Therefore, examiner cites Bloomberg to further provide these details that are missing in the Yamaguchi.

Bloomberg discloses "the present invention provides a method and apparatus for identifying highlighted marks and regions (partial images) in document. **The capability to identify** and distinguish highlighted regions on a document will have a number of uses. For example, after location of highlighted regions, OCR techniques could be used to retrieve information contained in the highlighted region" (col. 5, lines 30-36) and further discloses **"in other applications, a user may circle a portion of a document using a color pen, and the information within the circled region may be extracted"** (col. 5, lines 45-50). Bloomberg further discloses "the invention

provides not only a method for detecting highlighted regions but also a method for showing or retrieving in their entirety characteristics or marks (partial image) which have been only partially highlighted" (col. 5, lines 56-60) and further discloses **"In other applications (e.g. OCR systems) it will be desirable specifically to identify the characters (partial image) in the highlighted region..."** (col. 7, lines 20-25). Bloomberg further teaches the use of scanner to scan the document (or image) and saving the image in to the memory (col. 6, lines 1-15) and further binarizes the image (col. 6, lines 45-60) and further teaches morphological processing to recognize the partial image in the document (or image). As well known in the art since mid 1980's, **morphological processing using structuring elements (SEs) (pixel-block areas)** been used in the art of extracting and recognizing (or identifying) characters (patterns or partial image) in the document scanned (image) and the same use of SEs has been taught by Bloomberg. Bloomberg provides the teachings relating SEs by disclosing "**The SE is defined by a center location (target pixel)** and a number of pixel locations, each having a defined value (ON or OFF). **The pixels defining the SE do not have to be adjacent to each other.** The center location need not be at the geometrical center of the pattern: indeed it need not even be inside the pattern" (col. 4, lines 20-28). Bloomberg further discloses "The net effect of sequential ERODE by a horizontal and then a vertical SE is the same as if image were ERODED by the outer product of the horizontal and vertical elements. ...The 4x4, 1x4, and 4x1 SEs are illustrated in fig. 3C" (col. 8, lines 39-57) and fig 3C clearly **shows the conditions concerning the pixels on the outermost lines of said pixel-block area (SE) as shown by 4x4 SE and 1x4 SE.** Bloomberg further teaches the recognizing in which: the pixels on the opposite sides on the outermost lines of said pixel block area are removed (col. 12, lines 14-16), identify the coordinates of the corners of each box (**the pixels at the opposite vertices**) (col. 12, lines 35-36) and further teaches "**Displaying a one pixel-wide boundary, just outside of each**

highlighted region" (col. 12, lines 49-50). Therefore, it would have been obvious for one of ordinary skill in the art at the time invention was made to combine the details of partial image recognition as taught by Bloomberg in the invention of Yamaguchi because both references are directed to extract and recognize the partial image being contained in the binary image and both references are directed to use this recognizing partial image method in copiers (See Bloomberg: col. 10, lines 35-68) and Bloomberg further teaches that the disclosed method would provide improved and better identification and extraction of partial image from the binary image (col. 18, lines 24-26).

Regarding Claim 15, Yamaguchi et al. further disclose the pattern-detection apparatus of Claim 14, wherein said partial image is approximately a circular image (Figure 10, Reference Pattern for Preliminary Decision).

Regarding claim 19, Bloomberg discloses a low-resolution conversion unit that converts said binary image data obtained by said binarizing unit to binary image data of lower resolution, and said partial-image recognition unit recognizing a partial image for said binary image data converted to lower image data by said low-resolution conversion unit (col. 6, lines 30-60; col. 7, lines 30-40; col. 12, lines 1-15).

With regards to Claims 20 and 21, arguments analogous to those presented for Claim 1 are applicable to Claim 20 and 21.

Claims 22-24 has been similarly analyzed and rejected as per claims 14, 20 and 21.

7. Claims 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al. (U.S. 5,390,003), further in view of Bloomberg et al., U.S. Patent No. 5,048,109 and further in view of the background of the instant invention.

Regarding **Claim 16**, Both Yamaguchi et al. do not explicitly disclose specific configuration of the number of OFF-pixels (e.g., white pixels in a binarized image) as a condition for the partial-image recognition. Bloomberg as discussed before in rejection of claim 14, does talk about specific configuration of on and off pixels in a pixel block. Bloomberg does not specifically teach a number of the arrangement.

However, the background of the instant invention disclose the condition for the partial-image recognition in the partial-image recognition unit is the one that the number of OFF-pixels in each pixel pair that is located at opposite vertices is less than 2 (Specification disclosure, Page 2, Lines 6-9. Since the number of ON-pixel within an "m x n" pixel rectangle block area in the neighborhood of a target pixel falls within a predetermined range, inherently, the number of OFF-pixel within that block are also falls within a predetermined range.).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to recognize the partial-image pattern to modify Yamaguchi et al.'s invention to incorporate further limitations recited in Claim 16 because it is a well-known procedure routinely implemented in the art that can rapidly detect a specific pattern.

With regards to Claims 17 and 18, arguments analogous to those presented for Claim 16 are applicable to Claims 17 and 18.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Gillies, U.S. Patent No. 4,821,333, discloses a machine learning procedures for generating image domain feature detector structuring elements and adding more emphasis on col. 4, lines 12-18 and lines 45-68.
- Sternberg et al., U.S. Patent No. 4,395,698, discloses a neighborhood transformation logic circuitry for an image analyzer system and emphasis added on figure 2.
- Denker et al., U.S. Patent No. 5,224,179, discloses image skeletonization and adding more emphasis on figures 3 and 4.
- Bloomberg et al., U.S. Patent No. 5,202,933, discloses segmentation of text and graphics and adding more emphasis on figures 2A and 8.
- Bloomberg et al., U.S. Patent No. 5,201,011, discloses a method and apparatus for image hand markup detection using morphological techniques and adding more emphasis on figure 27.
- Bloomberg, U. S. Patent No. 5,181,255, discloses segmentation of handwriting and machine printed text.
- Bloomberg, U.S. Patent No. 5,168,147, discloses binary image processing for decoding self-clocking glyph shape codes and adding more emphasis on figures 3B and 22.

- Klevecz et al., U.S. Patent No. 4,724,543, discloses method and apparatus for automatic digital image analysis and adding more emphasis on figures 4 and 5.
- Crimmins et al., U.S. Patent No. 4,644,585, discloses method and shape recognition using structuring elements (SEs).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Manav Seth whose telephone number is (571) 272-7456. The examiner can normally be reached on Monday to Friday from 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta, can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Manav Seth
Art Unit 2625
September 17, 2005

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